INDEX TO AUTHORS

A

ADELMAN, WILLIAM J., JR., and TAYLOR, ROBERT E. Effects of replacement of external sodium chloride with sucrose on membrane currents of the squid giant axon, 451

B

BLOIS, M. S., ZAHLAN, A. B., and MALING, J. E. Electron spin resonance studies on melanin, 471

BOCKRATH, R. C., JR. See PERSON and BOCKRATH, 355

BURNS, VICTOR W. Regulation and coordination of purine and pyrimidine biosyntheses in yeast. I. Regulation of purine biosynthesis and its relation to transient changes in intracellular nucleotide levels, 151

BURTON, A. C. See RAND and BURTON, 115, 491

C

CAIN, C. J., and HEYN, A. N. J. X-Ray diffraction studies of the crystalline structure of the avian egg shell, 23

CALVIN, MELVIN. See KUNTZ, LOACH, and CALVIN, 227

CARR, CHARLES W., and SOLLNER, KARL. The electroosmotic effects arising from the interaction of the selectively anion and selectively cation permeable parts of mosaic membranes, 189

CASE, CARL T. See SCHWARTZ and CASE, 137

COLE, KENNETH S. See FITZHUGH and COLE, 257

D

DORFMAN, ALBERT. Metabolism of acid mucopolysaccharides, suppl., p. 155

DZIEWIATKOWSKI, DOMINIC D. Effect of hormones on the turnover of polysaccharides in connective tissues, suppl., p. 215

F

FINKELSTEIN, ALAN. Carrier model for active transport of ions across a mosaic membrane, 421

FITZHUGH, RICHARD, and COLE, KENNETH S. Theoretical potassium loss from squid axons as a function of temperature, 257

FORRO, FREDERICK, JR. See HERMAN and FORRO, 335

G

GALLOP, PAUL M. Concerning some special structural features of the collagen molecule, suppl., p. 79

GELERNTER, H. L., and SWIHART, J. C. A mathematical-physical model of the genesis of the electrocardiogram, 285

GERSTEIN, GEORGE L., and MANDELBROT, BENOIT. Random walk models for the spike activity of a single neuron, 41

GIBBS, C. L., JOHNSON, E. A., and TILLE, J. An example of information retention in rabbit ventricular muscle fibers, 329

GOLDMAN, DAVID E. A molecular structural basis for the excitation properties of axons, 167

GRAHAM, A. F. See RAKE and GRAHAM, 267

GROSS, JEROME. Organization and disorganization of collagen, suppl., p. 63

H

HARRIS, DAVID R., and MACINTYRE, WALTER M. The crystal and molecular structure of 5-fluoro-2′-deoxy-β-uridine, 203

HEARON, JOHN Z. Application of results from linear kinetics to the Hodgkin-Huxley equations, 69

HERMAN, ROBERT K., and FORRO, FREDERICK, JR. Autoradiographic study of transfer of DNA during bacterial conjugation, 335

HEYN, A. N. J. See CAIN and HEYN, 23

HOLTZER, HOWARD. Control of chondrogenesis in the embryo, suppl., p. 239

HOUSE, C. R. The nature of water transport across frog skin, 401

I

INCARDONA, N. L., and KAESBERG, PAUL. A pH-induced structural change in bromegrass mosaic virus, 11

J

JENERICK, HOWARD. An analysis of the striated muscle fiber action current, 77

———. Letter to the Editor, 251

JOHNSON, E. A., and TILLE, J. The repolarization phase of the cardiac ventricular action potential: A time-dependent system of membrane conductances, 387

———. See GIBBS, JOHNSON, and TILLE, 329

K

KAESBERG, PAUL. See INCARDONA and KAESBERG, 11

KATCHALSKY, A. Polyelectrolytes and their biological interactions, suppl., p. 9

KAUZMANN, WALTER. The three dimensional structures of proteins, suppl., p. 43

KUNTZ, IRWIN D., JR., LOACH, PAUL A., and CALVIN, MELVIN. Absorption changes in bacterial chromatophores, 227

L

LOACH, PAUL A. See KUNTZ, LOACH, and CALVIN, 227

M

MACINTYRE, WALTER M. Non-planar distribution of nitrogen atom bonds in nucleosides, 495

——. See HARRIS and MACINTYRE, 203

MALING, J. E. See BLOIS, ZAHLAN, and MALING, 471

MALMON, A. G. Fission fragment tracks as uranium tracers in biological electron microscopy, 1

MANDELBROT, BENOIT. See GERSTEIN and MANDELBROT, 41

MARK, H. Macromolecules: Origin, development, significance, suppl., p. 5

N

NORTON, DORITA A. See WOBSCHALL and NORTON, 465

P

PERSON, S., and BOCKRATH, R. C., JR. Differential mutation production by the decay of incorporated tritium compounds in *Escherichia coli*, 355

PETERSEN, D. See PUCK, SANDERS, and PETERSEN, 441

PLONSEY, ROBERT. Volume conductor fields of action currents, 317

POLLARD, ERNEST, and WOODYATT, SUZANNE. The effect of temperature on the formation of T1 and T2r bacteriophage, 367

PORTER, KEITH R. Cell fine structure and biosynthesis of intercellular macromolecules, suppl., p. 167

PUCK, T. T., SANDERS, P., and PETERSEN, D. Life cycle analysis of mammalian cells. II. Cells from the Chinese hamster ovary grown in suspension culture, 441

R

RABINOWITCH, E. See RUBINSTEIN and RABINOWITCH, 107

RAKE, A. V., and GRAHAM, A. F. Kinetics of incorporation of uridine-C^{14} into L cell RNA, 267

RAND, R. P. Mechanical properties of the red cell membrane. II. Viscoelastic breakdown of the membrane, 303

—— and BURTON, A. C. Mechanical properties of the red cell membrane. I. Membrane stiffness and intracellular pressure, 115

—— and ——. The pressure inside red cells and the "metabolic pump," 491

ROBERTSON, WILLIAM VAN B. Metabolism of collagen in mammalian tissues, suppl., p. 93

RUBENSTEIN, IRWIN. See THOMAS and RUBENSTEIN, 93

RUBINSTEIN, D., and RABINOWITCH, E. Action spectrum for the appearance of the 520 mμ difference band in illuminated *Chlorella* cells, 107

S

SANDERS, P. See PUCK, SANDERS, and PETERSEN, 441

SCHUBERT, MAXWELL. Intercellular macromolecules containing polysaccharides, suppl., p. 119

SCHWARTZ, MANUEL, and CASE, CARL T. Electric impedance and rectification of fused anion-cation membranes in solution, 137

SOLLNER, KARL. See CARR and SOLLNER, 189

STEVENS, CHARLES F. Letter to the Editor, 417

STROMINGER, JACK L. Nucleotide intermediates in the biosynthesis of heteropolymeric polysaccharides, suppl., p. 139

SWIHART, J. C. See GELERNTER and SWIHART, 285

T

TAYLOR, ROBERT E. See ADELMAN and TAYLOR, 451

THOMAS, C. A., JR., and RUBENSTEIN, IRWIN. The arrangements of nucleotide sequences in T2 and T5 bacteriophage DNA molecules, 93

THOMAS, LEWIS. The effects of papain, vitamin A, and cortisone on cartilage matrix *in vivo*, suppl., p. 207

TILLE, J. See GIBBS, JOHNSON, and TILLE, 329

——. See JOHNSON and TILLE, 387

W

WOBSCHALL, DAROLD, and NORTON, DORITA A. An investigation of electrical conductivity of steroids, 465

WOODYATT, SUZANNE. See POLLARD and WOODYATT, 367

Z

ZAHLAN, A. B. See BLOIS, ZAHLAN, and MALING, 471

INDEX TO SUBJECTS

A

Absorption changes in bacterial chromatophores, 227
Acid, deoxyribonucleic, molecules, T2 and T5 bacteriophage, arrangements of nucleotide sequences, 93
——, deoxyribonucleic, transfer during bacterial conjugation, autoradiographic study, 335
—— mucopolysaccharides, metabolism, suppl., p. 155
——, ribonucleic, L cell, kinetics of incorporation of uridine-C^{14} into, 267
Anion and cation selectively permeable parts of mosaic membranes, electroosmotic effects arising from interaction of, 189
Anion-cation membranes, fused, in solution, electric impedance and rectification, 137
Atom bonds, nitrogen, in nucleosides, nonplanar distribution, 495
Autoradiographic study of DNA transfer during bacterial conjugation, 335
Avian egg shell, crystalline structure, x-ray diffraction studies, 23
Axon, squid giant, effects of replacement of external sodium chloride with sucrose on membrane currents, 451
Axons, excitation properties, molecular structural basis, 167
——, squid, theoretical potassium loss as function of temperature, 257

B

Bacterial chromatophores, absorption changes, 227
—— conjugation, autoradiographic study of DNA transfer during, 335
Bacteriophage, T2 and T5, DNA molecules, arrangements of nucleotide sequences, 93
——, T1 and T2r, temperature effect on formation, 367
Band, difference, 520 mμ, in illuminated *Chlorella* cells, action spectrum for appearance of, 107
Biological electron microscopy, fission fragment tracks as uranium tracers in, 1
—— interactions, polyelectrolytes, suppl., p. 9
Biosyntheses, purine and pyrimidine, regulation and coordination in yeast, purine biosynthesis regulation, relation to transient changes in intracellular nucleotide levels, 151
Biosynthesis of heteropolymeric polysaccharides, nucleotide intermediates in, suppl., p. 139
—— of intercellular macromolecules and cell fine structure, suppl., p. 167
Blood cell, red. *See* Erythrocyte.
Bonds, nitrogen atom, in nucleosides, nonplanar distribution, 495
Bromegrass mosaic virus, hydrogen ion concentration–induced structural change in, 11

C

Carbon-14, uridine labeled with, kinetics of incorporation into L cell RNA, 267
Cardiac ventricular action potential, repolarization phase, time-dependent system of membrane conductances, 387
Cartilage matrix, *in vivo*, effects of papain, vitamin A, and cortisone, suppl., p. 207
Cation and anion selectively permeable parts of mosaic membranes, electroosmotic effects arising from interaction of, 189
Cation-anion membranes, fused, in solution, electric impedance and rectification, 137
Cell, blood, red. *See* Erythrocyte.
—— fine structure and biosynthesis of intercellular macromolecules, suppl., p. 167
——, intercellular macromolecules containing polysaccharides, suppl., p. 119
——, intracellular nucleotide levels, regulation of purine biosynthesis and its relation to transient changes in, 151
——, L, RNA, kinetics of uridine-C^{14} incorporation into, 267
Cells, *Chlorella*, illuminated, action spectrum for appearance of 520 mμ difference band in, 107
——, mammalian, from Chinese hamster ovary grown in suspension culture, life cycle analysis, 441
Chlorella cells, illuminated, action spectrum for appearance of 520 mμ difference band in, 107
Chondrogenesis in embryo, control of, suppl., p. 239
Chromatophores, bacterial, absorption changes, 227
Collagen metabolism in mammalian tissues, suppl., p. 93

Collagen molecule, special structural features, suppl., p. 79
——, organization and disorganization, suppl., p. 63
Conductances, membrane, time-dependent system, cardiac ventricular action potential repolarization phase, 387
Conductivity, electrical, of steroids, 465
Conductor, volume, fields of action currents, 317
Conjugation, bacterial, autoradiographic study of DNA transfer during, 335
Connective tissues. *See* Tissues.
Cortisone, papain, and vitamin A, effects on cartilage matrix *in vivo*, suppl., p. 207
Crystal and molecular structure of 5-fluoro-2′-deoxy-β-uridine, 203
Crystalline structure of avian egg shell, x-ray diffraction studies, 23
Cultivation, suspension, life cycle analysis of Chinese hamster ovary cells grown in, 441
Current, action, striated muscle fiber, analysis, 77
Currents, action, volume conductor fields, 317
——, membrane, squid giant axon, effects of replacement of external sodium chloride with sucrose, 451

D

Decay of incorporated tritium compounds in *Escherichia coli*, differential mutation production by, 355
Deoxyribonucleic acid molecules, T2 and T5 bacteriophage, arrangements of nucleotide sequences, 93
—— acid transfer during bacterial conjugation, autoradiographic study, 335
2′-Deoxy-β-uridine, 5-fluoro-, crystal and molecular structure, 203
Diffraction studies, x-ray, of crystalline structure of avian egg shell, 23
Distribution, non-planar, of nitrogen atom bonds in nucleosides, 495

E

Egg shell, avian, crystalline structure, x-ray diffraction studies, 23
Electric impedance and rectification of fused anion-cation membranes in solution, 137
Electrical conductivity of steroids, 465
Electrocardiogram genesis, mathematical-physical model, 285
Electrolytes, poly-, biological interactions, suppl., p. 9
Electron microscopy, biological, fission fragment tracks as uranium tracers in, 1
—— spin resonance studies on melanin, 471
Electroosmotic effects arising from interaction of selectively anion and selectively cation permeable parts of mosaic membranes, 189
Embryo, control of chondrogenesis in, suppl., p. 239
Equations, Hodgkin-Huxley, application of results from linear kinetics to, 69
Erythrocyte membrane, mechanical properties, membrane stiffness and intracellular pressure, 115
—— membrane, mechanical properties, viscoelastic breakdown, 303
Erythrocytes and metabolic pump, pressure inside, 491
Escherichia coli, differential mutation production by decay of incorporated tritium compounds in, 355
Excitation properties of axons, molecular structural basis, 167

F

Fiber, muscle, striated, action current, analysis, 77
Fibers, muscle, ventricular, rabbit, information retention example, 329
Fission fragment tracks as uranium tracers, biological electron microscopy, 1
5-Fluoro-2′-deoxy-β-uridine, crystal and molecular structure, 203
Frog skin, nature of water transport across, 401

G

Genesis of electrocardiogram, mathematical-physical model, 285

H

Heteropolymeric polysaccharides, nucleotide intermediates in, biosynthesis of, suppl., p. 139
Hodgkin-Huxley equations, application of results from linear kinetics to, 69
Hormones, effect on turnover of polysaccharides in connective tissues, suppl., p. 215
Huxley-Hodgkin equations, application of results from linear kinetics to, 69
Hydrogen ion concentration–induced structural change in bromegrass mosaic virus, 11

I

Ion concentration, hydrogen, structural change in bromegrass mosaic virus induced by, 11
Ions, active transport across mosaic membrane, carrier model for, 421

K

Kinetics, linear, application of results from, to Hodgkin-Huxley equations, 69
—— of incorporation of uridine-C^{14} into L cell RNA, 267

L

Letters to the Editor, 251, 417, 491, 495

M

Macromolecules, intercellular, biosynthesis and cell fine structure, suppl., p. 167
——, intercellular, containing polysaccharides, suppl., p. 119
——, origin, development, significance, suppl., p. 5
Mammalian cells from Chinese hamster ovary grown in suspension culture, life cycle analysis, 441
—— tissues, collagen metabolism, suppl., p. 93
Mathematical-physical model of electrocardiogram genesis, 285
Matrix, cartilage, *in vivo*, effects of papain, vitamin A, and cortisone, suppl., p. 207
Melanin, electron spin resonance studies, 471
Membrane conductances, time-dependent system, cardiac ventricular action potential repolarization phase, 387
—— currents, squid giant axon, effects of replacement of external sodium chloride with sucrose, 451
——, mosaic, carrier model for active transport of ions across, 421
——, red cell, mechanical properties, membrane stiffness and intracellular pressure, 115
——, red cell, mechanical properties, viscoelastic breakdown, 303
Membranes, fused anion-cation, in solution, electric impedance and rectification, 137
——, mosaic, selectively anion and cation permeable parts, electroosmotic effects arising from interaction of, 189
Metabolic pump and red cells, pressure inside, 491
Metabolism, collagen, in mammalian tissues, suppl., p. 93
—— of acid mucopolysaccharides, suppl., p. 155
Microscopy, electron, biological, fission fragment tracks as uranium tracers in, 1
Model, carrier, for active transport of ions across mosaic membrane, 421
——, mathematical-physical, of electrocardiogram genesis, 285
Models, random walk, for spike activity of single neuron, 41
Molecular and crystal structure of 5-fluoro-2'-deoxy-β-uridine, 203
—— structural basis for excitation properties of axons, 167
Molecule, collagen, special structural features, suppl., p. 79
Molecules, macro-, intercellular, biosynthesis and cell fine structure, suppl., p. 167
——, macro-, intercellular, containing polysaccharides, suppl., p. 119
——, macro-, origin, development, significance, suppl., p. 5
——, T2 and T5 bacteriophage DNA, arrangements of nucleotide sequences, 93
Mosaic membrane, carrier model for active transport of ions across, 421
—— membranes, selectively anion and cation permeable parts, electroosmotic effects arising from interaction of, 189
—— virus, bromegrass, hydrogen ion concentration–induced structural change in, 11
Mucopolysaccharides, acid, metabolism, suppl., p. 155
Muscle fiber, striated, action current, analysis, 77
—— fibers, ventricular, rabbit, information retention example, 329
Mutation production, differential, by decay of incorporated tritium compounds in *Escherichia coli*, 355

N

Neuron, single, random walk models for spike activity, 41
Nitrogen atom bonds in nucleosides, non-planar distribution, 495
Nucleic acid, deoxyribo-, molecules, T2 and T5 bacteriophage, arrangements of nucleotide sequences, 93
—— acid, deoxyribo-, transfer during bacterial conjugation, autoradiographic study, 355
—— acid, ribo-, L cell, kinetics of incorporation of uridine-C^{14} into, 267
Nucleosides, non-planar distribution of nitrogen atom bonds in, 495
Nucleotide intermediates in biosynthesis of heteropolymeric polysaccharides, suppl., p. 139
—— levels, intracellular, regulation of purine biosynthesis and its relation to transient changes in, 151
—— sequences in T2 and T5 bacteriophage DNA molecules, arrangements, 93

O

Osmotic, electro-, effects arising from interaction of selectively anion and selectively

cation permeable parts of mosaic membranes, 189
Ovary cells, Chinese hamster, grown in suspension culture, life cycle analysis, 441

P

Papain, vitamin A, and cortisone, effects on cartilage matrix *in vivo*, suppl., p. 207
Phage. *See* Bacteriophage.
Physical-mathematical model of electrocardiogram genesis, 285
Polyelectrolytes, biological interactions, suppl., p. 9
Polysaccharides, heteropolymeric, nucleotide intermediates in, biosynthesis of, suppl., p. 139
—— in connective tissues, effect of hormones, suppl., p. 215
——, intercellular macromolecules containing, suppl., p. 119
——, muco-, acid, metabolism, suppl., p. 155
Potassium loss, theoretical, from squid axons, as function of temperature, 257
Potential, action, cardiac ventricular, repolarization phase, time-dependent system of membrane conductances, 387
Pressure inside red cells and metabolic pump, 491
——, intracellular, and membrane stiffness, mechanical properties of red cell membrane, 115
Proteins, three dimensional structures, suppl., p. 43
Pump, metabolic, and red cells, pressure inside, 491
Purine and pyrimidine biosyntheses in yeast, purine biosynthesis regulation, relation to transient changes in intracellular nucleotide levels, 151
Pyrimidine and purine biosyntheses in yeast, purine biosynthesis regulation, relation to transient changes in intracellular nucleotide levels, 151

R

Radioactive carbon, uridine labeled with, kinetics of incorporation into L cell RNA, 267
Random walk models, spike activity of single neuron, 41
Repolarization phase of cardiac ventricular action potential, time-dependent system of membrane conductances, 387
Resonance, spin, electron, studies on melanin, 471
Retention, information, example, rabbit ventricular muscle fibers, 329
Ribonucleic acid, deoxy-, molecules, T2 and T5 bacteriophage, arrangements of nucleotide sequences, 93
Ribonucleic acid, deoxy-, transfer during bacterial conjugation, autoradiographic study, 335
—— acid, L cell, kinetics of incorporation of uridine-C^{14} into, 267
Roentgen ray diffraction studies of crystalline structure of avian egg shell, 23

S

Skin, frog, nature of water transport across, 401
Sodium chloride, external, replacement with sucrose, effects on membrane currents of squid giant axon, 451
Solution, fused anion-cation membranes in, electric impedance and rectification, 137
Spectrum, action, for appearance of 520 mμ difference band in illuminated *Chlorella* cells, 107
Spike activity of single neuron, random walk models, 41
Spin, electron, resonance studies, on melanin, 471
Squid axons, theoretical potassium loss as function of temperature, 257
—— giant axon, effects of replacement of external sodium chloride with sucrose on membrane currents, 451
Steroids, electrical conductivity, 465
Striated muscle fiber action current, analysis, 77
Sucrose, replacement of external sodium chloride with, effects on squid giant axon membrane currents, 451
Suspension culture, life cycle analysis of Chinese hamster ovary cells grown in, 441

T

Temperature effect on formation of T1 and T2r bacteriophage, 367
——, theoretical potassium loss from squid axons as function of, 257
Tissues, connective, effect of hormones on turnover of polysaccharides in, suppl., p. 215
——, mammalian, collagen metabolism, suppl., p. 93
Tracers, uranium, fission fragment tracks as, in biological electron microscopy, 1
Transfer of DNA during bacterial conjugation, autoradiographic study, 335
Transport, active, of ions across mosaic membrane, carrier model for, 421
——, water, across frog skin, nature, 401
Tritium compounds, incorporated in *Escherichia coli*, differential mutation production by decay of, 355

U

Uranium tracers in biological electron microscopy, fission fragment tracks as, 1
Uridine, β-, 5-fluoro-2′-deoxy-, crystal and molecular structure, 203
—— labeled with C^{14}, incorporation into L cell RNA, kinetics, 267

V

Ventricular action potential, cardiac, repolarization phase, time-dependent system of membrane conductances, 387
—— muscle fibers, rabbit, information retention example, 329
Virus, bromegrass mosaic, hydrogen ion concentration–induced structural change in, 11
Viscoelastic breakdown of red cell membrane, 303
Vitamin A, papain, and cortisone, effects on cartilage matrix *in vivo*, suppl., p. 207

W

Water transport across frog skin, nature, 401

X

X-Ray. *See* Roentgen ray.

Y

Yeast, regulation and coordination of purine and pyrimidine biosyntheses in, purine biosynthesis regulation, relation to transient changes in intracellular nucleotide levels, 151